In the first module, Psychotropic medication and the heart: Part 1, we summarised the normal ECG, the effects of psychotropic medication on heart rate and blood pressure, and the use of psychotropic medication in coronary heart disease.

A number of psychotropic medications are known to have serious cardiac side effects including a prolonged QT interval, which is associated with an increased risk of dysrhythmia and of sudden death. More recently, attention has focused on cardiovascular complications reported in association with clozapine, especially myocarditis and cardiomyopathy, which can lead to sudden cardiac death. It is very important that clinicians are aware of these serious side effects of psychotropic medications.

In this module, we discussed the normal cardiac conductive system, the effects of psychotropic medication on the conductive system and on QT interval, the clinical features and ECG changes associated with Brugada syndrome, and the clinical features and management of clozapine-induced myocarditis and cardiomyopathy.

Effects of psychotropic medication – introduction

- A number of psychotropic medications are known to increase the risk of ventricular arrhythmias and sudden cardiac death (SCD) by prolonging cardiac conduction.
- Tricyclic antidepressant and neuroleptic medications can also increase the risk of ventricular arrhythmias and sudden cardiac death by inducing a Brugada syndrome phenotype.
- These medications should be used with great care in patients already at risk of cardiac complications, who will need close monitoring.
- Brugada syndrome (BS) is associated with tricyclic antidepressants/neuroleptic toxicity. Brugada syndrome causes idiopathic ventricular fibrillation in structurally normal hearts and sudden unexpected death in about 30% of untreated cases. The electrocardiogram (ECG) in Brugada syndrome features characteristic signs including right bundle branch block, S–T segment elevation in chest leads V1–V3 and a normal QT interval.

Psychotropic medication and cardiac rhythm

- Psychotropic medication, particularly TCAs, can prolong the QT interval, which is associated with the development of life-threatening arrhythmias.
- Drug-induced prolongation of the QT interval is potentially preventable. Therefore, while prescribing medications, clinicians should consider:
  - predisposing risk factors
  - drug interactions.

Effects of psychotropic medication on cardiac muscle and contractility

- Recent evidence suggests that clozapine is associated with a very low risk of potentially fatal myocarditis or cardiomyopathy.
- Clozapine-induced hypersensitivity and myocarditis should be suspected by psychiatrists when cardiac dysfunction appears suddenly, and appropriate diagnostic strategies and therapeutic strategies must be undertaken promptly.
• Some authorities recommend an ECG, serum troponin measurement and creatinine kinase-MB measurement for patients who develop new evidence of cardiovascular disease, such as tachycardia, chest pain or dyspnoea, while taking clozapine.

• If significant changes from the baseline are detected, a cardiology consultation should be strongly considered.

Further reading


ECG Library (2011) A normal adult 12-lead ECG. [website]


Learntheheart.com (2011) ECG Basics. [website]
